

An annotated checklist of ladybeetle species (Coleoptera, Coccinellidae) of Portugal, including the Azores and Madeira Archipelagos

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Abstract

A comprehensive annotated checklist of the ladybeetle species of Portugal, including the Azores and Madeira archipelagos, is presented. The Coccinellidae fauna comprises a total of 101 species: 83 from the Mainland, 39 from Madeira, and 32 from the Azores. The listed species are distributed among 2 subfamilies and 13 tribes: within the subfamily Microweiseinae, Madeirodolini (1 species), Serangiini (2 species), and within the subfamily Coccinellinae, Azyini (1 species), Chilacorini (4 species), Coccidulini (7 species), Coccinellini (30 species), Epilachnini (4 species), Hyperaspidini (7 species), Noviini (2 species), Platynaspini (1 species), Scymnini (37 species), Stethorini (3 species), and Sticholotidini (2 species). The Portuguese fauna comprises 10 exotic species: 5 present in the Mainland, 7 in Madeira, and 6 in the

Azores. *Harmonia axyridis* (Pallas, 1773) from Madeira, *Propylea quatuordecimpunctata* (Linnaeus, 1758) from the Azores, *Delphastus catalinae* (Horn, 1895) from the Azores and Madeira, *Nephus* (*Geminosipho*) *reunioni* (Fürsch, 1974) and *Nephus* (*Nephus*) *voeltzkowi* Weise, 1910 from Madeira and *Microserangium* sp. from the Mainland, are reported for the first time. Some species are considered doubtful records, as explained in the text. These results were obtained by compiling information on the available literature regarding ladybeetle species on the Portuguese mainland and insular territories, and original data.

Keywords

Azores, Coccinellidae, Madeira, Palearctic Region, Portugal

Introduction

The book by Raimundo and Alves (1986) was the last review of the coccinellid (Coleoptera: Coccinellidae) fauna of Portugal. Since then, several studies on Portuguese ladybeetles have been published, including catalogues (e.g. Fürsch 1987; Kovář 2007; Eizaguirre 2015), new individual records (e.g., Serrano and Borges 1987; Raimundo 1992; Soares et al. 2003a, b; Raimundo et al. 2006; Soares et al. 2006), and studies on ladybeetle communities in agricultural ecosystems (e.g. Magro et al. 1994; Carlos et al. 2005; Silva et al. 2006; Silva et al. 2010; Benhadi-Marin et al. 2011; Santos et al. 2012), among others. However, the information is scattered and therefore difficult to analyse.

Ladybeetles comprise about 375 genera (Nedvěd 2020) and nearly 6000 species (Vandenberg 2002), distributed worldwide. They are characterised by a high diversity as regards to their life history, development, distribution, habitat, and food relationships (see Hodek et al. 2012 for review). This family of insects is very charismatic, in particular because most species are predators recognised as useful natural enemies of pests, including aphids (Aphidoidea), scale insects (Coccoidea), whiteflies (Aleyrodoidea) or mites (Acari). Largely used in biological control programmes, ladybeetles render important ecosystem services to agriculture and silviculture (Ameixa et al. 2018). In fact, the first successful case of classical biological control dates back to the late 1800s, when *Novius* (= *Rodolia*) *cardinalis* (Mulsant) was introduced in California from Australia to control the cottony cushion scale, *Icerya purchasi* Maskell, also of Australian origin (Caltagirone et al. 1989). The introduction of this ladybeetle in Portugal in 1897 was the first case of classical biological control in Europe (Amaro 1994). However, ladybeetles also have other food habits and a few species are herbivores causing heavy crop damages in Asia, America and Africa (Barrigossi et al. 2003; Beyene et al. 2007; Das et al. 2012).

Scientific evidence shows that human activities have huge negative impacts on biodiversity (e.g., Vitousek et al. 1997; Newbold et al. 2015; Jung et al. 2019). The structure and composition of insect communities have been particularly affected by these activities, with ecological domino effects along trophic chains (Dyer et al. 2003). Consequently, action in favour of insect conservation and recovery has been claimed (e.g., Harvey et al. 2020). Ladybeetle communities are no exception. For instance, several studies report long-term variations in the composition of ladybeetle communities fol-

lowing the introduction of *Harmonia axyridis* Pallas around the world (Roy et al. 2016). Honěk et al. (2014, 2017) included agricultural intensification, habitat (particularly urbanization) and climate changes as additional causes for ladybeetle community changes. In this context, and because it is important that each country should have an updated list of its fauna, from which we can detect changes in biodiversity and implement conservation and recovery programmes, we herein address the issue of the coccinellid fauna of Portugal, within the research project AZORESBIOPORTAL–PORBIOTA (ACORES-01-0145-FEDER-000072).

Based on the literature and unpublished data, we present an updated, comprehensive checklist of ladybeetles of Portugal, including the Azores and Madeira Archipelagos.

Materials and methods

In this work we follow the suprageneric classification of Coccinellidae proposed by Che et al. (2021). This recent revised classification recognises three subfamilies: Microweiseinae, Monocoryninae stat. nov., and Coccinellinae. It should be noted that the tribe Coccidulini *sensu* Seago et al. (2011), which comprises several species for Portugal, was redefined by Che et al. (2021) in which Scymnini and Stethorini were split independently.

Current taxonomic affiliation follows Kovář (2007). Species cited for Portugal after Kovář (2007) or those for which the taxonomic position has changed as a result of more recent studies, are indicated here following more recent publications.

The species are listed in alphabetic order according to their valid tribe and genera. Species of the genera *Nephus* and *Scymnus* are listed under the respective subgenera because they are particularly important for their identification. Synonymy is mentioned but is restricted to the original name.

For each species, we specify the regions where the species were recorded (Mainland, Azores and/or Madeira), under “Distribution” and we provide brief notes about the status of the species in each region, possible taxonomic incongruences, and the current biogeographical (limits as in Löbl and Smetana 2007) distribution under “Comments”. New records are marked with a black spot (•), doubtful records with an asterisk (*) and exotic species with a dollar (\$). The bibliographic references associated with each species recorded for Portugal are presented in Table 1.

Table 1. Checklist (by alphabetic order) and bibliographic references of Coccinellidae species recorded for Portugal, including the Azores and Madeira.

Species	References
<i>Adalia bipunctata</i> (Linnaeus, 1758)	12, 27, 29, 30, 32, 39, 42, 47, 50, 52, 53, 55, 59, 60, 64, 67, 68, 74, 75, 77
<i>Adalia decempunctata</i> (Linnaeus, 1758)	3, 4, 5, 9, 12, 14, 26, 30, 32, 39, 42, 47, 50, 52, 53, 55, 56, 57, 59, 60, 64, 65, 67, 68, 72, 73, 74, 75, 77, 82
<i>Adalia testudinea</i> (Wollaston, 1854)	1, 2, 8, 14, 29, 67, 68
<i>Anatis ocellata</i> (Linnaeus, 1758)	12, 67, 77
<i>Anisosticta novemdecimpunctata</i> (Linnaeus, 1758)	13, 12, 39, 67, 77
<i>Calvia decemguttata</i> (Linnaeus, 1767)	39, 67, 77

Species	References
<i>Calvia quatuordecimguttata</i> (Linnaeus, 1758)	12, 39, 77
<i>Calvia quindecimguttata</i> (Fabricius, 1777)	39
<i>Ceratomegilla notata</i> (Laicharting, 1781)	12, 39, 67
<i>Ceratomegilla undecimnotata</i> (Schneider, 1792)	12, 39, 55, 67, 77
<i>Chilocorus bipustulatus</i> (Linnaeus, 1758)	9, 12, 14, 26, 27, 29, 30, 39, 47, 50, 52, 53, 55, 59, 60, 64, 65, 66, 67, 68, 72, 75
<i>Chnootriba elaterii</i> (Rossi, 1794)	31, 39, 67, 77
<i>Clitostethus arcuatus</i> (Rossi, 1794)	1, 2, 8, 20, 29, 30, 39, 40, 47, 50, 52, 53, 55, 56, 57, 59, 64, 67, 68, 73, 75
<i>Coccidula rufa</i> (Herbst, 1783)	18, 39, 77
<i>Coccidula scutellata</i> (Herbst, 1783)	12, 39, 77
<i>Coccinella genistae</i> Wollaston, 1854	1, 2, 8, 14, 17, 29, 37, 42, 52, 67, 68
<i>Coccinella septempunctata</i> Linnaeus, 1758	9, 30, 32, 35, 39, 43, 47, 50, 55, 56, 57, 59, 60, 64, 66, 72, 73, 74, 75, 77
<i>Coccinella undecimpunctata</i> Linnaeus, 1758	3, 4, 5, 9, 30, 32, 35, 39, 45, 55, 59, 67, 77, 82
<i>Coccinula quatuordecimpustulata</i> (Linnaeus, 1758)	1, 2, 39
<i>Coccinula sinuatomarginata</i> (Faldermann, 1837)	29, 67
<i>Coelopterus salinus</i> Mulsant & Rey, 1852	67
<i>Cryptolaemus montrouzieri</i> Mulsant, 1853	39, 47, 50, 52, 53, 64
<i>Delphastus catalinae</i> (Horn, 1895)	Present study
<i>Eriopis connexa</i> (Germar, 1824)	44, 55, 59
<i>Exochomus quadripustulatus</i> (Linnaeus, 1758)	19, 39, 47, 50, 52, 53, 64, 66, 67, 72, 75
<i>Halyzia sedecimguttata</i> (Linnaeus, 1758)	12, 19, 39, 67, 77
<i>Harmonia axyridis</i> (Pallas, 1773)	Present study
<i>Harmonia quadripunctata</i> (Pontoppidan, 1763)	29, 30, 39, 40, 42, 47, 50, 64, 67, 68, 77
<i>Henosepilachna angusticollis</i> (Reiche, 1862)	77
<i>Henosepilachna argus</i> (Geoffrey, 1785)	12, 39, 67
<i>Hippodamia variegata</i> (Goeze, 1777)	1, 2, 8, 11, 14, 21, 23, 25, 29, 32, 36, 39, 42, 50, 52, 53, 55, 56, 57, 64, 67, 68, 72, 75, 77
<i>Hyperaspis concolor</i> (Suffrian, 1843)	67, 77
<i>Hyperaspis duvergeri</i> Fürsch, 1985	70
<i>Hyperaspis hoffmannseggii</i> (Gravenhorst, 1807)	39
<i>Hyperaspis illecebrosa</i> Mulsant, 1846	16, 67, 77
<i>Hyperaspis pantherina</i> Fürsch, 1975	58, 61, 68, 69
<i>Hyperaspis reppensis</i> (Herbst, 1783)	12, 47, 50, 52, 53, 60, 64, 66
<i>Hyperaspis stigma</i> (Olivier, 1808)	67
<i>Iberorhynchobius rondensis</i> (Eizaguirre, 2004)	62, 63, 74, 77, 78, 79
<i>Madeirodula atlantica</i> Szawaryn, Větrovec & Tomaszewska, 2020	85
<i>Microserangium</i> sp.	Present study
<i>Myrrha octodecimguttata</i> (Linnaeus, 1758)	6, 8, 14, 20, 29, 36, 38, 39, 42, 55, 59, 65, 67, 68, 75, 77
<i>Myzia oblongoguttata</i> (Linnaeus, 1758)	39, 66
<i>Nephus (Bipunctatus) bisignatus</i> (Boheman, 1850)	38, 40, 49, 50, 52, 53, 55, 59, 64, 67, 72, 75, 77
<i>Nephus (Bipunctatus) conjunctus</i> (Wollaston, 1870)	48, 49, 50, 52, 53, 64, 67, 68, 77
<i>Nephus (Bipunctatus) peyerimhoffi</i> (Sicard, 1923)	49, 50, 64, 67, 77
<i>Nephus (Geminosispho) reunioni</i> (Fürsch, 1974)	47, 48, 49, 50, 52, 53, 64, 67, 71, 77
<i>Nephus (Nephus) binotatus</i> (Brisout de Barneville, 1863)	39, 47, 52, 53, 64
<i>Nephus (Nephus) flavopictus</i> (Wollaston, 1854)	1, 2, 8, 14, 15, 17, 21, 22, 25, 30, 26, 27, 29, 32, 35, 40, 41, 42, 46, 55, 57, 59, 67, 68, 83
<i>Nephus (Nephus) quadrimaculatus</i> (Herbst, 1783)	39, 64
<i>Nephus (Nephus) schatzmayri</i> Canepari & Tedeschi, 1977	67, 70
<i>Nephus (Nephus) ulbrichi</i> Fürsch, 1977	49, 52, 53, 64
<i>Nephus (Nephus) voeltzkowi</i> Weise, 1910	84
<i>Nephus (Sidis) depressiusculus</i> (Wollaston, 1867)	46, 68
<i>Nephus (Sidis) hiekei</i> (Fürsch, 1965)	49, 50, 52, 53, 55, 56, 57, 64, 72, 77
<i>Nephus (Sidis) pooti</i> Fürsch, 1999	77
<i>Novius cardinalis</i> (Mulsant, 1850)	30, 32, 35, 39, 42, 44, 45, 46, 47, 49, 50, 52, 53, 54, 55, 60, 64, 68, 73, 67, 82
<i>Novius cruentatus</i> Mulsant, 1846	67
<i>Oenopia conglobata</i> (Linnaeus, 1758)	12, 39, 47, 50, 52, 53, 59, 63, 65, 73, 74, 76
<i>Oenopia doublieri</i> (Mulsant, 1846)	12, 39, 50, 52, 53, 64, 67, 72, 77, 81

Species	References
<i>Oenopia lyncea</i> (Olivier, 1808)	12, 39, 67
<i>Parexochomus nigripennis</i> (Erichson, 1843)	67
<i>Parexochomus nigromaculatus</i> (Goeze, 1777)	12, 39, 47, 50, 52, 53, 60, 64, 66, 72, 74, 75
<i>Pharoscymnus decemplagiatus</i> (Wollaston, 1857)	2, 7, 14, 29, 32, 42, 46, 55, 67, 68, 82
<i>Platynaspis luteorubra</i> (Goeze, 1777)	12, 39, 47, 50, 52, 53, 64, 72, 75
<i>Propylea quatuordecimpunctata</i> (Linnaeus, 1758)	11, 39, 47, 50, 52, 53, 60, 64, 67, 72, 73, 75
<i>Psyllobora vigintiduopunctata</i> (Linnaeus, 1758)	12, 39, 47, 50, 52, 53, 67, 77
<i>Rhyzobius chrysomeloides</i> (Herbst, 1792)	10, 12, 36, 39, 47, 50, 52, 53, 55, 56, 57, 64, 65, 66, 67, 68, 72, 73, 74, 75, 82
<i>Rhyzobius forestieri</i> (Mulsant, 1853)	80
<i>Rhyzobius litura</i> (Fabricius, 1787)	1, 2, 3, 4, 5, 7, 8, 9, 11, 14, 25, 26, 27, 29, 30, 32, 35, 36, 39, 42, 47, 50, 52, 53, 55, 56, 57, 64, 65, 67, 68, 72, 73, 75
<i>Rhyzobius lophanthae</i> (Blaisdell, 1892)	36, 39, 42, 44, 46, 47, 50, 51, 52, 53, 55, 56, 59, 64, 65, 66, 67, 68, 72
<i>Scymniscus fuerschi</i> (Plaza, 1981)	50, 52, 64
<i>Scymniscus helgae</i> (Fürsch, 1965)	38, 39, 40, 55, 59, 72, 74, 75
<i>Scymniscus semirufus</i> (Weise, 1885)	39, 47, 48, 64, 72, 77
<i>Scymnus (Mimopullus) epistemoides</i> Wollaston, 1867	10, 14, 29, 30, 40, 66, 67
<i>Scymnus (Mimopullus) limnichoides</i> Wollaston, 1854	1, 2, 8, 14, 30, 40, 51, 67, 68
<i>Scymnus (Mimopullus) marinus</i> (Mulsant, 1850)	1, 2, 8, 12, 14, 30, 39, 40, 47, 50, 51, 52, 53, 64, 65, 68, 74, 75
<i>Scymnus (Neopullus) ater</i> Kugelann, 1794	13, 34, 39, 77
<i>Scymnus (Neopullus) haemorrhoidalis</i> Herbst, 1797	2, 8, 14, 40, 41, 55, 67, 68.
<i>Scymnus (Neopullus) limbatus</i> Stephens, 1832	27, 29, 67, 68
<i>Scymnus (Parapullus) abietis</i> (Paykull, 1798)	2, 11, 39, 56, 57, 68, 77
<i>Scymnus (Pullus) auritus</i> Thunberg, 1795	12, 39, 49, 50, 52, 53, 64, 67, 77
<i>Scymnus (Pullus) subvillosus</i> (Goeze, 1777)	1, 2, 8, 9, 11, 12, 14, 26, 29, 32, 34, 35, 39, 43, 47, 50, 52, 53, 55, 59, 64, 65, 66, 67, 68, 72, 74, 75, 82
<i>Scymnus (Pullus) suturalis</i> Thunberg, 1795	24, 12, 27, 29, 30, 38, 39, 40, 46, 47, 50, 51, 52, 53, 55, 59, 73, 66, 67, 68, 82
<i>Scymnus (Scymnus) apetzi</i> Mulsant, 1846	1, 2, 4, 8, 14, 25, 27, 29, 32, 39, 40, 42, 46, 47, 50, 52, 53, 55, 64, 67, 68, 72, 74, 75
<i>Scymnus (Scymnus) bivulnerus</i> Baudi di Selve, 1894	39, 77
<i>Scymnus (Scymnus) frontalis</i> (Fabricius, 1787)	12, 39, 60, 64, 67, 75, 77
<i>Scymnus (Scymnus) interruptus</i> (Goeze, 1777)	5, 11, 32, 35, 39, 40, 43, 47, 50, 52, 53, 55, 57, 60, 64, 66, 67, 72, 74, 75, 82
<i>Scymnus (Scymnus) laetificus</i> Weise, 1879	77
<i>Scymnus (Scymnus) nubilus</i> Mulsant, 1850	2, 20, 30, 38, 39, 40, 43, 50, 52, 53, 55, 56, 57, 64, 65, 67, 68, 82
<i>Scymnus (Scymnus) rubromaculatus</i> (Goeze, 1777)	27, 29, 30, 32, 40, 55, 67, 68
<i>Scymnus (Scymnus) rufipes</i> (Fabricius, 1798)	12, 39, 47, 54, 52, 53, 60, 64, 72, 67, 77
<i>Scymnus (Scymnus) schmidtii</i> Fürsch, 1958	40, 55, 77
<i>Scymnus (Scymnus) suffrianioides</i> Sahlberg, 1913	33, 39, 64, 72
<i>Sospita vigintiguttata</i> (Linnaeus, 1758)	12, 39, 77
<i>Stethorus pusillus</i> (Herbst, 1797)	9, 19, 20, 26, 32, 35, 39, 40, 47, 50, 52, 53, 55, 59, 60, 64, 72, 73, 74, 75, 82
<i>Stethorus tenerifensis</i> Fürsch, 1987	42, 51, 67
<i>Stethorus wollastoni</i> Kapur, 1948	1, 2, 7, 8, 14, 15, 22, 28, 29, 32, 56, 57, 67, 68
<i>Subcoccinella vigintiquatuorpunctata</i> (Linnaeus, 1758)	12, 39, 50, 52, 53, 67, 72
<i>Tytthaspis sedecimpunctata</i> (Linnaeus, 1761)	12, 39, 52, 53, 67, 73, 75
<i>Vibidia duodecimguttata</i> (Poda von Neuhaus, 1761)	12, 39, 67, 75

1. Wollaston (1854), 2. Wollaston (1857), 3. Drouet (1859), 4. Drouet (1861), 5. Tarnier (1861), 6. Wollaston (1862), 7. Wollaston (1864), 8. Wollaston (1865), 9. Crotch (1867), 10. Wollaston (1867), 11. Hayden (1870), 12. Oliveira (1894), 13. Barros (1896), 14. Fauvel (1897), 15. Cameron (1901), 16. Barros (1913), 17. Winkler (1924-1932), 18. Barros (1926), 19. De la Fuente (1928), 20. De la Fuente (1929), 21. Uyttenboogaart (1930 in Fürsch 1966), 22. Korschevsky (1931), 23. Alluaud (1935), 24. Liebmann, (1939), 25. Jansson (1940), 26. Méquignon (1942), 27. Uyttenboogaart (1947), 28. Kapur (1949), 29. Lundblad (1958), 30. Bielawski (1963), 31. Fürsch (1964), 32. Fürsch (1966), 33. Capra and Fürsch (1967), 34. Gourreau (1974), 35. Serrano (1982), 36. Israelson (1984), 37. Mitter (1984), 38. Gillerfors (1986), 39. Raimundo and Alves (1986), 40. Fürsch (1987), 41. Serrano and Borges (1987), 42. Erber and Hinterseher (1988), 43. Borges and Serrano (1989), 44. Borges (1990a), 45. Borges (1990b), 46. Erber (1990), 47. Franco et al. (1992), 48. Magro et al. (1992), 49. Raimundo (1992), 50. Magro et al. (1994), 51. Erber and Aguiar (1996), 52. Magro et al. (1999), 53. Magro and Hemptinne (1999), 54. Soares et al. (1999), 55. Soares et al. (2003a), 56. Soares et al. (2003b), 57. Soares et al. (2003c), 58. Félix et al. (2004), 59. Borges et al. (2005b), 60. Carlos et al. (2005), 61. Félix et al. (2005), 62. Branco et al. (2006), 63. Raimundo et al. (2006), 64. Silva et al. (2006), 65. Soares et al. (2006), 66. Gonçalves et al. (2007), 67. Kovář (2007), 68. Boieiro et al. (2008), 69. Félix et al. (2008), 70. Canepari (2009), 71. Borges et al. (2010), 72. Santos et al. (2010), 73. Silva et al. (2010), 74. Benhadi-Marin et al. (2011), 75. Santos et al. (2012), 76. Tavares et al. (2014), 77. Eizaguirre (2015), 78. Tavares et al. (2015a), 79. Tavares et al. (2015b), 80. Borges et al. (2017), 81. Borges et al. (2018), 82. Calado (2018), 83. Romanowski et al. (2019), 84. Magro et al. (2020b), 85. Szawaryn et al. (2020).

Results

Subfamily MICROWEISEINAE

Tribe MADEIRODULINI

Madeirodula atlantica Szawaryn, Větrovec and Tomaszewska 2020 (following Szawaryn et al. 2020)

Distribution. Madeira.

Comments. This is a recently described new tribe, genus and species, endemic to Madeira.

Tribe SERANGIINI

\$Delphastus catalinae (Horn, 1895)

= *Cryptognatha catalinae* Horn 1895

Distribution. Madeira• and Azores•.

Comments. A native species of Nearctic and Neotropical regions, currently established in the Palearctic region following introductions in biological control programs. Its presence in the Azores probably originated from deliberate releases for biological control of whiteflies. A large population was first recorded by Isabel Borges, from kales in a vegetable garden (S. Miguel Island 37°48'02"N, 25°36'42"W), August 2018, where both adults and larvae were abundant. In Madeira, Délia Cravo collected in October 2006 from *Musa acuminata* Colla (Funchal 32°39'26"N, 16°55'56"W) and José Jesus collected in September 2020 on *Citrus reticulata* Blanco, (Santana 32°48'27"N, 16°53'13"W). First records for Portugal.

\$Microserangium sp.

= *Microserangium* Miyatake, 1961

Distribution. Mainland•.

Comments. Oriental origin. First observations by Vera Zina, in 2012, Algarve. A few individuals were collected in August 2012, and May, July and November 2013 from the canopy of citrus (Carocha, Boliqueime 37°08'55.9"N, 8°08'11.6"W; Estibeira, Boliqueime 37°07'27"N, 8°07'16"W; Benafim 37°14'17"N, 8°06'36"W). First record for Portugal.

Subfamily COCCINELLINAE**Tribe AZYINI****\$ *Cryptolaemus montrouzieri* Mulsant, 1853**

Distribution. Mainland.

Comments. Currently established in Palearctic, Afrotropical, Nearctic and Neotropical regions. This exotic species of Australian origin, used around the world for biological control since the 19th century, was introduced from France in the early 20th century for the biological control of the citrus mealybug, *Planococcus citri* (Risso) (Franco et al. 1994), but the first record in Europe was in Italy, 1908 (Roy and Migeon 2010).

Tribe CHILOCORINI***Chilocorus bipustulatus* (Linnaeus, 1758)**

= *Coccinella bipustulata* Linnaeus, 1758

Distribution. Mainland, Madeira and Azores.

Comments. Palearctic, Afrotropical, and Nearctic distribution.

***Exochomus quadripustulatus* (Linnaeus, 1758)**

= *Coccinella quadripustulata* Linnaeus, 1758

Distribution. Mainland.

Comments. Palearctic and Nearctic distribution.

***Parexochomus nigripennis* (Erichson, 1843)**

= *Chilocorus nigripennis* Erichson, 1843

Distribution. Mainland.

Comments. Palearctic and Afrotropical distribution.

***Parexochomus nigromaculatus* (Goeze, 1777)**

= *Coccinella nigromaculata* Goeze, 1777

Distribution. Mainland

Comments. Palearctic distribution.

Tribe COCCIDULINI***Coccidula rufa* (Herbst, 1783)**

= *Dermestes rufus* Herbst, 1783

Distribution. Mainland.

Comments. Palearctic distribution.

***Coccidula scutellata* (Herbst, 1783)**

= *Chrysomela scutellata* Herbst, 1783

Distribution. Mainland.

Comments. Palearctic distribution.

***Iberorhizobius rondensis* (Eizaguirre, 2004)**

= *Coccidula rondensis* Eizaguirre, 2004

Distribution. Mainland.

Comments. This is an endemic species of the Iberian Peninsula, associated with maritime pine forests, and is a specialist predator of the maritime pine bast scale, *Matsucoccus feytaudi* Ducasse (Tavares et al. 2014; Tavares et al. 2015a; Tavares et al. 2015b). Adults and mostly larvae were shown to be attracted by the sex pheromone of their prey (Branco et al. 2006).

***Rhizobius chrysomeloides* (Herbst, 1792)**

= *Strongylus chrysomeloides* Herbst, 1792

Distribution. Mainland, Madeira and Azores.

Comments. Palearctic distribution.

^{\$} *Rhizobius forestieri* (Mulsant, 1853)

= *Platyomus forestieri* Mulsant, 1853

Distribution. Azores.

Comments. Palearctic, Nearctic and Australian distribution. This exotic species of Australian origin was introduced in Europe in the 1980's for the biological control of scale insects (Coccoidea), and became established in different countries, including Italy, France, Greece and Albania (Roy and Migeon 2010; Soares et al. 2018). The first record in Europe was in Italy in 1982 (Roy and Migeon 2010). It was recently recorded in the Azores (Borges et al. 2017).

***Rhyzobius litura* (Fabricius, 1787)**

= *Nitidula litura* Fabricius, 1787

Distribution. Mainland, Madeira and Azores.

Comments. Palearctic distribution.

***\$ Rhyzobius lophanthae* (Blaisdell, 1892)**

= *Scymnus lophanthae* Blaisdell, 1892

Distribution. Mainland, Madeira and Azores.

Comments. Palearctic, Afrotropical, Nearctic, Neotropical, and Australian distribution. This species, native to Queensland, Australia (Tomaszewska 2010) was first introduced in Europe (Italy), in 1908, for the biological control of armoured scale insects (Coccoidea: Diaspididae) and imported to Portugal in the 1930's and 1980's (Roy and Migeon 2010).

Tribe COCCINELLINI

***Adalia bipunctata* (Linnaeus, 1758)**

= *Coccinella bipunctata* Linnaeus, 1758

Distribution. Mainland, Madeira and Azores.

Comments. Worldwide distributed (Palearctic, Afrotropical, Australian, Nearctic and Neotropical regions).

***Adalia decempunctata* (Linnaeus, 1758)**

= *Coccinella decempunctata* Linnaeus, 1758

Distribution. Mainland, Madeira and Azores.

Comments. Palearctic distribution.

***Adalia testudinea* (Wollaston, 1854)**

= *Coccinella testudinea* Wollaston, 1854

Distribution. Madeira.

Comments. Macaronesian endemic species.

***Anatis ocellata* (Linnaeus, 1758)**

= *Coccinella ocellata* Linnaeus, 1758

Distribution. Mainland.

Comments. Palearctic distribution.

***Anisosticta novemdecimpunctata* (Linnaeus, 1758)**

= *Coccinella novemdecimpunctata* Linnaeus, 1758

Distribution. Mainland.

Comments. Palearctic distribution.

***Calvia decemguttata* (Linnaeus, 1767)**

= *Coccinella decemguttata* Linnaeus, 1767

Distribution. Mainland.

Comments. Palearctic distribution.

***Calvia quatuordecimguttata* (Linnaeus, 1758)**

= *Coccinella quatuordecimguttata* Linnaeus, 1758

Distribution. Mainland.

Comments. Palearctic, Nearctic and Oriental distribution.

***Calvia quindecimguttata* (Fabricius, 1777)**

= *Coccinella quindecimguttata* Fabricius, 1777

Distribution. Mainland.

Comments. Palearctic distribution.

***Ceratomegilla notata* (Laicharting, 1781)**

= *Coccinella notata* Laicharting, 1781

Distribution. Mainland.

Comments. Palearctic distribution.

***Ceratomegilla undecimnotata* (Schneider, 1792)**

= *Coccinella undecimnotata* Schneider, 1792

Distribution. Mainland and Azores.

Comments. Palearctic distribution.

***Coccinella genistae* Wollaston, 1854**

Distribution. Madeira.

Comments. Macaronesian endemic species.

***Coccinella septempunctata* Linnaeus, 1758**

Distribution. Mainland, Madeira and Azores*.

Comments. Palearctic, Afrotropical, Nearctic and Oriental distribution. Relatively important species in cereal crops in the Azores, especially in the first half of the 20th century, having eventually disappeared when these crops became scarce (Soares et al. 2008; Soares et al. 2017). The taxonomic status of *C. algerica* has been under discussion because of its morphological similarities to the geographically widespread *Coccinella septempunctata* L. Although Lecompte et al. (2016) revealed a high genetic structuring pattern, with an Algerian rear-edge population highly differentiated, consistent with their morphological distinctiveness, a recent study by Romanowski et al. (2019) demonstrated that individuals from Canarian populations, usually classified as *C. algerica*, can hybridise with individuals from European populations of *C. septempunctata* giving rise to fertile F1 descendants. These authors therefore propose to synonymise *C. algerica* with *C. septempunctata* but, taking into account the morphological peculiarities of the North African and the Canarian populations, they consider that this species is a subspecies: *Coccinella septempunctata algerica* Kovář, 1977.

***Coccinella undecimpunctata* Linnaeus, 1758**

Distribution. Mainland and Azores.

Comments. Palaearctic, Australian and Nearctic distribution. In the Azores, it is a threatened species due to anthropogenic pressures on the coastal areas (Soares et al. 2017).

***Coccinula quatuordecimpustulata* (Linnaeus, 1758)**

= *Coccinella quatuordecimpustulata* Linnaeus, 1758

Distribution. Mainland and Madeira*.

Comments. Palearctic and Afrotropical distribution. Although previously recorded in the Madeira archipelago, there are doubts regarding its present occurrence. It might have been introduced but did not establish (Franquinho Aguiar, personal communication).

***Coccinula sinuatomarginata* (Faldermann, 1837)**

= *Coccinella sinuatomarginata* Faldermann, 1837

Distribution. Mainland and Madeira*.

Comments. Palearctic distribution. Although previously recorded for the Madeira archipelago, there are doubts as to its present occurrence. It might have been introduced but did not establish (Franquinho Aguiar, personal communication).

***Eriopis connexa* (Germar, 1824)**

= *Coccinella connexa* Germar, 1824

Distribution. Azores*.

Comments. Of Neotropical origin where it is very common. Although previously reported for the Azores, it did not become established (*fide* A. O. Soares, after intensive surveys).

***Halysia sedecimguttata* (Linnaeus, 1758)**

= *Coccinella sedecimguttata* Linnaeus, 1758

Distribution. Mainland.

Comments. Palearctic distribution.

\$ *Harmonia axyridis* (Pallas, 1773)

= *Coccinella axyridis* Pallas, 1773

Distribution. Madeira*.

Comments. Worldwide distribution. Several specimens (adults, larvae and pupae) collected by Miguel M. Andrade, in September 2019, from *Enterolobium* sp. (Funchal 32°38'39"N, 16°55'31"W), Graça Freitas and Franquinho Aguiar, collected in September and October 2020, from *Annona cherimola* Mill. (Funchal 32°39'47"N, 16°53'41"W). *Harmonia axyridis* is the most invasive insect of the world (Roy et al. 2016). However, despite deliberate attempts to introduce the species in the Azores, she has not become established. The apparent failure can be explained by a combination of resource availability and inter-specific competition (Soares et al. 2017; Soares et al. 2018) and climate conditions (Alaniz et al. 2021). The fate of this introduction in Madeira, whose conditions are like those of the Azores, will be important to follow. First record for Portugal.

***Harmonia quadripunctata* (Pontoppidan, 1763)**

= *Coccinella quadripunctata* Pontoppidan, 1763

Distribution. Mainland, Madeira.

Comments. Palearctic and Nearctic distribution.

***Hippodamia variegata* (Goeze, 1777)**

= *Coccinella variegata* Goeze, 1777

Distribution. Mainland, Madeira and Azores.

Comments. Palearctic, Afrotropical, Nearctic and Oriental distribution.

***Myrrha octodecimguttata* (Linnaeus, 1758)**

= *Coccinella octodecimguttata* Linnaeus, 1758

Distribution. Mainland, Madeira and Azores.

Comments. Palearctic distribution.

***Myzia oblongoguttata* (Linnaeus, 1758)**

= *Coccinella oblongoguttata* Linnaeus, 1758

Distribution. Mainland.

Comments. Palearctic distribution.

***Oenopia conglobata* (Linnaeus, 1758)**

= *Coccinella conglobata* Linnaeus, 1758

Distribution. Mainland.

Comments. Palearctic distribution.

***Oenopia dublieri* (Mulsant, 1846)**

= *Harmonia dublieri* Mulsant, 1846

Distribution. Mainland and Azores.

Comments. Palearctic distribution.

***Oenopia lyncea* (Olivier, 1808)**

= *Coccinella lyncea* Olivier, 1808

Distribution. Mainland.

Comments. Palearctic distribution.

***Propylea quatuordecimpunctata* (Linnaeus, 1758)**

= *Coccinella quatuordecimpunctata* Linnaeus, 1758

Distribution. Mainland and Azores*.

Comments. Palearctic and Nearctic distribution. First record for the Azores. Several adults were collected in July 2019 by António O. Soares and Isabel Borges, in a vegetable garden, of the parish of Castelo Branco (GPS coordinates: 38°31'23.2"N, 28°41'21.0"W), Faial Island.

***Psyllobora vigintiduopunctata* (Linnaeus, 1758)**

= *Coccinella vigintiduopunctata* Linnaeus, 1758

Distribution. Mainland.

Comments. Palearctic distribution.

***Sospita vigintiguttata* (Linnaeus, 1758)**

= *Coccinella vigintiguttata* Linnaeus, 1758

Distribution. Mainland.

Comments. Palearctic distribution.

***Tytthaspis sedecimpunctata* (Linnaeus, 1761)**

= *Coccinella sedecimpunctata* Linnaeus, 1761

Distribution. Mainland.

Comments. Palearctic distribution.

***Vibidia duodecimguttata* (Poda von Neuhaus, 1761)**

= *Coccinella duodecimguttata* Poda von Neuhaus, 1761

Distribution. Mainland.

Comments. Palearctic and Oriental distribution.

Tribe EPILACHNINI

***Chnootriba elaterii* (Rossi, 1794)**

= *Coccinella elaterii* Rossi, 1794

Distribution. Mainland.

Comments. Palearctic and Afrotropical distribution. Reported by Fürsch (1964) as the subspecies *portugalis*. Based on molecular and morphological data, it was suggested to transfer this species to the genus *Chnootriba* (Szawaryn et al. 2015; Tomaszewska and Szawaryn 2016).

***Henosepilachna angusticollis* (Reiche, 1862)**

= *Epilachna angusticollis* Reiche, 1862

Distribution. Mainland.

Comments. Distributed in the Mediterranean region.

Henosepilachna argus (Geoffrey, 1785)

= *Coccinella argus* Geoffrey, 1785

Distribution. Mainland.

Comments. Palearctic and Afrotropical distribution.

Subcoccinella vigintiquatuorpunctata (Linnaeus, 1758)

= *Coccinella vigintiquatuorpunctata* Linnaeus, 1758

Distribution. Mainland.

Comments. Palearctic and Nearctic distribution.

Tribe HYPERASPIDINI

Hyperaspis concolor (Suffrian, 1843)

= *Coccinella concolor* Suffrian, 1843

Distribution. Mainland.

Comments. Palearctic distribution.

Hyperaspis duvergeri Fürsch, 1985

Distribution. Mainland.

Comments. Palearctic distribution.

Hyperaspis hoffmannseggii (Gravenhorst, 1807)

= *Coccinella hoffmannseggii* Gravenhorst, 1807

Distribution. Mainland.

Comments. Palearctic distribution.

***Hyperaspis illecebrosa* Mulsant, 1846**

Distribution. Mainland.

Comments. Palearctic distribution. Eizaguirre (2015) refers to the existence of two subspecies for the Iberian Peninsula; *illecebrosa* Mulsant, 1846 and *castiliana* Eizaguirre ssp. nov.; only the first one is mentioned for Portugal.

\$ *Hyperaspis pantherina* Fürsch, 1975, following Félix et al. (2004), Félix et al. (2005), Félix et al. (2008)

Distribution. Madeira.

Comments. Established in Palearctic/Madeira, originally from Afrotropical region. The first record for Europe was in 2002, in Madeira archipelago (Roy and Migeon 2010). In Madeira, it was introduced as a biological control agent against *Insignorthezia insignis* (Browne 1887).

***Hyperaspis reppensis* (Herbst, 1783)**

= *Coccinella reppensis* Herbst, 1783

Distribution. Mainland*.

Comments. Palearctic distribution. According to Eizaguirre (2015), this species does not exist in the Iberian Peninsula and has been mistaken for the endemic species, *H. illecebrosa*.

***Hyperaspis stigma* (Olivier, 1808)**

= *Coccinella stigma* Olivier, 1808

Distribution. Mainland.

Comments. Palearctic distribution.

Tribe NOVIINI

\$ *Novius cardinalis* (Mulsant, 1850), following Pang et al. (2020)

= *Vedalia cardinalis* Mulsant, 1850

Distribution. Mainland, Madeira and Azores.

Comments. Established in Palaearctic, Afrotropical, Nearctic and Neotropical, Oriental. Native to Australian region. This exotic species was introduced in California

and South Africa in the 1890's for the control of the cottony cushion scale, *Icerya purchasi* Maskell (Roy and Migeon 2010). The first introduction in Europe was made in Portugal, 1897 (Amaro 1994; Roy and Migeon 2010). *Rodolia cardinalis* is the widely known name and it was included in the genus *Novius* by Pang et al. (2020).

***Novius cruentatus* Mulsant, 1846**

Distribution. Mainland.

Comments. Palearctic distribution.

Tribe PLATYNASPIDINI

***Platynaspis luteorubra* (Goeze, 1777)**

= *Coccinella luteorubra* Goeze, 1777

Distribution. Mainland.

Comments. Palearctic distribution.

Tribe SCYMNINI

***Clitostethus arcuatus* (Rossi, 1794)**

= *Coccinella arcuata* Rossi, 1794

Distribution. Mainland, Madeira and Azores.

Comments. Palearctic, Afrotropical, Nearctic distribution.

***Nephus (Bipunctatus) bisignatus* (Boheman, 1850)**

= *Scymnus bisignatus* Boheman, 1850

Distribution. Mainland and Azores.

Comments. Palearctic distribution.

***Nephus (Bipunctatus) conjunctus* (Wollaston, 1870)**

= *Scymnus conjunctus* Wollaston, 1870

Distribution. Mainland and Madeira.

Comments. Palearctic and Afrotropical distribution. This species was first reported as *N. (bipunctatus) includens* (Kirsch 1871) based on adults emerged from larvae collected in 1988 from citrus fruits infested with mealybugs, in the South of Portugal (Algarve) (Raimundo 1992). However, Eizaguirre (2015) indicates that *N. (bipunctatus) includens* is a junior synonym of *N. conjuntus*. Taking this into account and knowing that specimens previously collected in 1984 in the Algarve and identified as *N. quadrimaculatus* Herbst were in fact shown to be *N. includens* (Raimundo and Alves 1986; Magro et al. 1992; Raimundo 1992), we have to consider that the first report of this species dates from 1984. The distribution is apparently restricted to the Algarve (Magro et al. 1992).

***Nephus (Bipunctatus) peyerimhoffi* (Sicard, 1923)**

= *Scymnus peyerimhoffi* Sicard, 1923

Distribution. Mainland.

Comments. Palearctic and Afrotropical distribution.

\$ *Nephus (Geminosipho) reunioni* (Füirsch, 1974a)

= *Scymnus reunioni* Füirsch, 1974a

Distribution. Mainland, Azores and Madeira•.

Comments. Palearctic and Afrotropical distribution. The first record in Europe was in France in 1983 (Roy and Migeon 2010). This species of Afrotropical origin was imported from France (laboratory rearing in Antibes) in the early 1980's and released in Oeiras, in 1984 (Magro et al. 1992). Its presence in Portugal was detected for the first time in 1990, in citrus orchards in the Setúbal region (Franco et al. 1992). In his Catalogue of the African species of the genus *Nephus*, Füirsch (2007) mentions that the distribution of *N. reunioni* is apparently restricted to Reunion Island and Mauritius, and that the references to its presence in South Africa and other Mediterranean countries, such as Portugal and Israel, are due to misidentifications by the author himself, which most likely correspond to *N. derroni* Füirsch 1974b, a species described from São Tomé Island and that is common in South Africa. However, Magro et al. (2020a) analysed specimens from Portugal and showed that they corresponded to the original description of *N. reunioni* made by Füirsch in Chazeau et al. (1974). Raimundo (1992), who first described *N. reunioni* for Portugal, also illustrated the external morphology and genitalia corresponding to the original description by Füirsch in Chazeau et al. (1974). In both cases, the observations showed that the specimens from the Portuguese population are distinct from *N. derroni*. In Madeira, collected by Aguiar and Jesus, in October 2008, from *Dombeya wallichii* (Lindl.) Baill. (Funchal 32°38'49"N, 16°56'16"W), Celestina Brazão in February 2003, from *Dombeya wallichii* (Lindl.)

Baill. (Funchal 32°39'49"N, 16°55'44"W), Aguiar and Jesus, in April 2005, from *Olea europaea* L. (Machico 32°38'49"N, 16°56'16"W), Délia Cravo, in September 2006, from *Jacaranda mimosifolia* D. Don (Funchal 32°39'05"N, 16°54'18"W), J.D. Sardinha, in January 2010, from *Persea americana* Mill. (Funchal 32°39'30"N, 16°54'34"W), Graça Freitas, in August 2011, from *Persea americana* Mill. (Funchal 32°39'00"N, 16°53'27"W), Graça Freitas, in July 2013, from *Persea americana* Mill. (Calheta 32°42'23"N, 17°08'39"W), Paula Rocha, in January 2015, from *Annona cherimola* Mill. (Funchal 32°39'47"N, 16°50'40"W), Florasanto, in June 2015, from *Pinus pinaster* Aiton (São Vicente 32°47'46"N, 17°01'55"W), Natália Nunes, in January 2016, from *Laurus novocanariensis* Rivas Mart., Lousã, Fern. Prieto, E. Díaz, J.C. Costa & C. Aguiar (Ponta do Sol 32°40'57"N, 17°06'01"W), Celestina Brazão, in August 2017, from *Nerium oleander* L. (Funchal 32°38'11"N, 16°56'02"W), Fátima Rocha, in November 2019, from *Psidium guajava* L. (Funchal 32°39'34"N, 16°52'33"W), Graça Freitas, in September 2020, from *Annona cherimola* Mill. (Funchal 32°39'47"N, 16°53'40"W), and Alexandra Magro and Miguel Sequeira, in September 2018, from herbaceous plants (Anjos 32°69'11"N, 17°11'96"W and Ribeira de Natal, Caniçal 32°73'57"N, 16°74'62"W). New record for Madeira.

***Nephus (Nephus) binotatus* (Brisout de Barneville, 1863)**

= *Scymnus binotatus* Brisout de Barneville, 1863

Distribution. Mainland.

Comments. Palearctic distribution.

***Nephus (Nephus) flavopictus* (Wollaston, 1854)**

= *Scymnus flavopictus* Wollaston, 1854

Distribution. Madeira and Azores.

Comments. Macaronesian endemic species.

***Nephus (Nephus) quadrimaculatus* (Herbst, 1783)**

= *Sphaeridium quadrimaculatum* Herbst, 1783

Distribution. Mainland.

Comments. Palearctic distribution.

***Nephus (Nephus) schatzmayri* Canepari & Tedeschi, 1977**

Distribution. Mainland.

Comments. Palearctic distribution.

***Nephus (Nephus) ulbrichi* Fürsch, 1977**

Distribution. Mainland.

Comments. Palearctic distribution.

***§ Nephus (Nephus) voeltzkowi* Weise, 1910, following Magro et al. (2020b)**

Distribution. Azores and Madeira*.

Comments. Afrotropical origin. Very recently, two parthenogenetic populations of this species were found in the Azores and Mascarene archipelagos, becoming the first reported case of asexuality in the Coccinellidae (Magro et al. 2020b). Observations by António Onofre Soares, in September of 1997, Madeira Island (Anjos; approximately at 32°41'15"N, 17°06'54"W; Faial approximately 32°47'24"N, 16°51'02"W; Caniçal approximately 32°44'49"N, 16°44'26"W), and Alexandra Magro and Miguel Sequeira in September 2018, from herbaceous plants (Anjos 32°69'11"N, 17°11'96"W; Ribeira de Natal, Caniçal 32°73'57"N, 16°74'62"W; Ribeira Brava 32°66'98"N, 17°06'09"W; Fajã dos Padres 32°65'45"N, 17°02'13"W). New record for Madeira.

***Nephus (Sidis) depressiusculus* (Wollaston, 1867)**

= *Scymnus depressiusculus* Wollaston, 1867

Distribution. Madeira.

Comments. Palearctic and Afrotropical distribution.

***Nephus (Sidis) hiekei* (Fürsch, 1965)**

= *Scymnus hiekei* Fürsch, 1965

Distribution. Mainland.

Comments. Palearctic distribution.

***Nephus (Sidis) pooti* Fürsch, 1999**

Distribution. Mainland.

Comments. Palearctic distribution.

***Scymniscus fuerschi* (Plaza, 1981)**

= *Nephus fuerschi* Plaza, 1981

Distribution. Mainland.

Comments. Palearctic distribution.

***Scymniscus helgae* (Fürsch, 1965)**

= *Scymnus helgae* Fürsch, 1965

Distribution. Mainland and Azores.

Comments. Palearctic distribution.

***Scymniscus semirufus* (Weise, 1885)**

= *Scymnus semirufus* Weise, 1885

Distribution. Mainland.

Comments. Palearctic distribution.

***Scymnus (Mimopullus) epistemoides* Wollaston, 1867**

Distribution. Madeira.

Comments. Palearctic distribution.

***Scymnus (Mimopullus) limnichoides* Wollaston, 1854**

Distribution. Madeira.

Comments. Palearctic distribution.

***Scymnus (Mimopullus) marinus* (Mulsant, 1850)**

= *Rhyzobius marinus* Mulsant, 1850

Distribution. Mainland and Madeira.

Comments. Palearctic distribution.

***Scymnus (Neopullus) ater* Kugelann, 1794**

Distribution. Mainland.

Comments. Palearctic distribution.

***Scymnus (Neopullus) haemorrhoidalis* Herbst, 1797**

Distribution. Madeira and Azores.

Comments. Palearctic distribution.

***Scymnus (Neopullus) limbatus* Stephens, 1832**

Distribution. Madeira.

Comments. Palearctic distribution.

***Scymnus (Parapullus) abietis* (Paykull, 1798)**

= *Coccinella abietis* Paykull, 1798

Distribution. Mainland and Madeira.

Comments. Palearctic distribution.

***Scymnus (Pullus) auritus* Thunberg, 1795**

Distribution. Mainland.

Comments. Palearctic distribution.

***Scymnus (Pullus) subvillosus* (Goeze, 1777)**

= *Coccinella subvillosa* Goeze, 1777

Distribution. Mainland, Madeira and Azores.

Comments. Palearctic and Afrotropical distribution.

Scymnus (Pullus) suturalis Thunberg, 1795

Distribution. Mainland, Madeira and Azores.

Comments. Palearctic and Nearctic distribution.

Scymnus (Scymnus) apetzi Mulsant, 1846

Distribution. Mainland.

Comments. Palearctic distribution.

Scymnus (Scymnus) bivulnerus Baudi di Selve, 1894

Distribution. Mainland.

Comments. Palearctic distribution.

Scymnus (Scymnus) frontalis (Fabricius, 1787)

= *Coccinella frontalis* Fabricius, 1787

Distribution. Mainland.

Comments. Palearctic distribution.

Scymnus (Scymnus) interruptus (Goeze, 1777)

= *Coccinella interrupta* Goeze, 1777

Distribution. Mainland, Madeira and Azores.

Comments. Palearctic distribution.

Scymnus (Scymnus) laetificus Weise, 1879

Distribution. Mainland.

Comments. Palearctic distribution. However, it only occurs in the Western Mediterranean.

***Scymnus (Scymnus) nubilus* Mulsant, 1850**

Distribution. Mainland, Madeira and Azores.

Comments. Palearctic distribution. On Portugal's mainland, this species was wrongly identified as *Scymnus levaillanti* Mulsant.

***Scymnus (Scymnus) rubromaculatus* (Goeze, 1777)**

= *Coccinella rubromaculata* Goeze, 1777

Distribution. Mainland, Madeira and Azores.

Comments. Palearctic and Afrotropical distribution.

***Scymnus (Scymnus) rufipes* (Fabricius, 1798)**

= *Coccinella rufipes* Fabricius, 1798

Distribution. Mainland.

Comments. Palearctic distribution.

***Scymnus (Scymnus) schmidtii* Fürsch, 1958**

Distribution. Mainland and Azores.

Comments. Palearctic distribution.

***Scymnus (Scymnus) suffrianioides* Sahlberg, 1913**

Distribution. Mainland.

Comments. Palearctic distribution.

Tribe STETHORINI***Stethorus pusillus* (Herbst, 1797)**

= *Scymnus pusillus* Herbst, 1797

Distribution. Mainland and Azores.

Comments. Palearctic distribution.

***Stethorus tenerifensis* Fürsch, 1987**

Distribution. Madeira.

Comments. Macaronesian endemic species.

***Stethorus wollastoni* Kapur, 1948**

Distribution. Madeira.

Comments. Macaronesian endemic species.

Tribe STICHOLOTIDINI***Coelopterus salinus* Mulsant & Rey, 1852**

Distribution. Mainland.

Comments. Palearctic and Afrotropical distribution.

***Pharoscymnus decemplagiatus* (Wollaston, 1857)**

= *Scymnus decemplagiatus* Wollaston, 1857

Distribution. Madeira and Azores.

Comments. Palearctic distribution.

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References

- Alaniz AJ, Soares AO, Azevedo EB, Grez AA (2021) The failed invasion of *Harmonia axyridis* in the Azores, Portugal: Climatic restriction or wrong population origin? *Insect Science* 28: 238–250. <https://doi.org/10.1111/1744-7917.12756>
- Alluaud C (1935) Les coléoptères des Iles Salvages. *Revue française d’Entomologie* 2(1): 35–44.
- Amaro P (1994) Portugal pioneiro da luta biológica na Europa através do combate à *Icéria* com a *Vedália*. In: Amaro P, Franco JC (Eds) 1º Congresso de Citricultura, Silves (Portugal), Janeiro de 1993. Câmara Municipal de Silves, Silves, 393–402.
- Ameixa OMCC, Soares AO, Soares AMVM, Lillebø AI (2018) Ecosystem Services Provided by the Little Things That Run the World. In: Şen B, Grillo O (Eds) *Selected Studies in Biodiversity*, 267–302. <https://doi.org/10.5772/intechopen.74847>
- Barrigossi JA, Hein GL, Higley, LG (2003) Economic injury levels and sequential sampling plans for Mexican bean beetle (Coleoptera: Coccinellidae) on dry beans. *Journal of Economic Entomology* 96(4): 1160–1167. <https://doi.org/10.1093/jee/96.4.1160>
- Barros JMC (1896) Subsídios para o estudo da fauna entomológica transmontana. Coleópteros do Concelho de Saborosa. *Anais de Sciencias Naturaes* 3: 39–44. [109–114, 186–194.]
- Barros JMC (1913) Adições ao catálogo dos Coleópteros de Portugal. *Brotéria, Série Zoológica* 6: 105–118.
- Barros JMC (1926) Notas Entomológicas. Memórias e Estudos do Museu Zoológico da Universidade de Coimbra 6: 7–16.
- Baudi di Selve F (1894) Viaggio del Dr. E. Festa in Palestina, nel Libano e regioni vicine. *Bollettino dei Musei di Zoologia e Anatomia Comparata della Reale Università di Torino* 9(173): 1–13. <https://doi.org/10.5962/bhl.part.8049>
- Benhadi-Marin J, Pereira JA, Barrientos JA, Bento A, Santos, SAP (2011) Diversity of predaceous arthropods in the almond tree canopy in Northeastern Portugal: A methodological approach. *Entomological Science* 14(3): 347–58. <https://doi.org/10.1111/j.1479-8298.2011.00444.x>
- Beyene Y, Hofsvang T, Azerefegne F (2007) Population dynamics of tef epilachna (*Chnootriba similis* Thunberg) (Coleoptera, Coccinellidae) in Ethiopia. *Crop Protection* 26(11): 1634–1643. <https://doi.org/10.1016/j.cropro.2007.01.005>
- Bielawski R (1963) X. Coccinellidae (Coleoptera) von Madeira. In: Lindberg H (Ed.) *A Contribution to the Study of Beetles in the Madeira Islands*. Social Science Fennica Communication Biology XXV(2): 72–102.
- Blaisdell FE (1892) A new species of Coleoptera from California. *Entomological News* 3: e51.
- Boheman CH (1850) Bildrag till Gottlands insekten-fauna. *Ófversigt af Kongliga Vetenskaps-Akademiens Förhandlingar* 1(3): 70–76.

- Boieiro M, Serrano ARM, Aguiar AMF (2008) Coccinellidae In: Borges PAV, Abreu C, Aguiar AMF, Carvalho P, Jardim R, Melo I, Oliveira P, Sérgio C, Serrano ARM, Vieira P (Eds) A list of the terrestrial fungi, flora and fauna of Madeira and Selvagens archipelagos. Direcção Regional do Ambiente da Madeira, Funchal and Universidade dos Açores, Angra do Heroísmo, 314–315.
- Borges I, Canepari C, Rodriguez I, Soares AO (2017) First record of *Rhyzobius forestieri* (Mulsant) (Coleoptera: Coccinellidae) for the Azores archipelago of Portugal. The Coleopterists Bulletin 71(4): 796–797. <https://doi.org/10.1649/0010-065X-71.4.796>
- Borges PAV (1990a) A checklist of Coleoptera from the Azores with some systematic and biogeographic comments. Boletim do Museu Municipal do Funchal 42(220): 87–136.
- Borges PAV (1990b) Estudo preliminar dos coleópteros (Insecta, Coleoptera) da ilha das Flores. Relatórios e Comunicações do Departamento de Biologia 18: 47–61.
- Borges PAV, Bried J, Costa A, Cunha R, Gabriel R, Gonçalves V, Martins AF, Melo I, Parente M, Raposeiro P, Rodrigues P, Santos RS, Silva L, Vieira P, Vieira V, Mendonça E, Boieiro M (2010) A list of the terrestrial and marine biota from the Azores. Princípiã, Cascais, 432 pp.
- Borges PAV, Oromí P, Dinis P, Jarroca S (2005) Coleoptera. In: Borges PAV, Cunha R, Gabriel R, Martins AF, Silva L, Vieira V (Eds) A list of the terrestrial fauna (Mollusc and Arthropoda) and flora (Bryophyta, Pteridophyta and Spermatophyta) from the Azores. Direcção Regional do Ambiente and Universidade dos Açores, Horta, Angra do Heroísmo and Ponta Delgada, 197–207.
- Borges PAV, Serrano ARM (1989) New records of the coleopterous fauna (Insecta, Coleoptera) from the Azores. Boletim do Museu Municipal do Funchal 41 (209): 5–24.
- Borges PAV, Gabriel R, Pimentel C, Brito M, Serrano A, Crespo L, Assing V, Stüben P, Fattorini S, Soares AO, Mendonça E, Nogueira E (2018) Biota from the coastal wetlands of Praia da Vitória (Terceira, Azores, Portugal): Part 1 – Arthropods. Biodiversity Data Journal 6: e27194. <https://doi.org/10.3897/BDJ.6.e27194>
- Branco M, Franco JC, Dunkelblum E, Assael F, Protasov A, Ofer D, Mendel Z (2006) A common mode of attraction of larvae and adults of insect predators to the sex pheromone of their prey (Hemiptera: Matsucoccidae). Bulletin of Entomological Research 96: 179–185. <https://doi.org/10.1079/BER2005415>
- Brisout de Barneville CNF (1863) New taxa. In: Grenier A (Ed.) Catalogue des coléoptères de France et matériaux pour servir à la faune des coléoptères français. Paris: L. Toinon, iv + 3–79 + 135 pp.
- Calado HRMG (2018) Ciência Cidadã nos Açores: O uso de Joaninhas (Coleoptera: Coccinellidae) como espécies-modelo. Dissertação de Mestrado em Biodiversidade e Biotecnologia, Universidade dos Açores, Ponta Delgada, 82 pp.
- Caltagirone LE, Doult RL (1989) The history of the vedalia beetle importation to California and its impact on the development of biological control. Annual Review of Entomology 34: 1–16. <https://doi.org/10.1146/annurev.en.34.010189.000245>
- Cameron M (1901) Notes on a few day's collecting (Coleoptera) at Madeira. Entomologist's Monthly Magazine 12(S. 2): 220–222.

- Canepari C (2009) New data on some Coccinellidae (Coleoptera) from the Mediterranean Region. *Zootaxa* 2318: 394–399. <https://doi.org/10.11646/zootaxa.2318.1.14>
- Canepari C, Tedeschi M (1977) Le sottospecie del *Nephus quadrimaculatus* (Herbst) (Coleoptera Coccinellidae). *Memorie della Società Entomologica Italiana* 55[1976]: 101–105.
- Capra F, Fürsch H, Kreissl E (1967) Revision einiger europäischer *Scymnus* (S. str.) – Arten. *Abteilung für Zoologie und Botanik am Landes museum “Joanneum” in Graz* 28: 207–259.
- Carlos C, Tão CB, Domingos JA, Costa JR, Alves F, Torres LM (2005) Insetos predadores associados à vinha na Região Demarcada do Douro. VII Encontro Nacional de Protecção Integrada. Escola Superior Agrária de Coimbra, Coimbra, Dezembro 2005, 388–397
- Che L, Zhang P, Deng S, Escalona HE, Wang X, Li Y, Pang H, Vandenberg N, Ślipiński A, Tomaszewska W, Liang D (2021) New insights into the phylogeny and evolution of lady beetles (Coleoptera: Coccinellidae) by extensive sampling of genes and species. *Molecular Phylogenetics and Evolution* 156: e107045. <https://doi.org/10.1016/j.ympev.2020.107045>
- Crotch GR (1867) On the Coleoptera of the Azores. *Proceedings of the Zoological Society of London*, 359–391.
- Das S, Uddin MM, Islam KS (2012) Effect of temperature on the behaviour of Epilachna Beetle (*Epilachna dodecastigma* Wied.) among different brinjal varieties. *Journal of Environmental Science and Natural Resources* 5(1): 167–172. <https://doi.org/10.3329/jesnr.v5i1.11572>
- De la Fuente JM (1928) Catálogo sistemático-geográfico de los Coleópteros observados en la Península Ibérica, Pirineos, propriamente dichos y Baleares. *Boletín de la Sociedad Entomológica de España* 11: 115–157.
- De la Fuente JM (1929) Catálogo sistemático-geográfico de los Coleópteros observados en la Península Ibérica, Pirineos, propriamente dichos y Baleares. *Boletín de la Sociedad Entomológica de España* 12: 21–32.
- Dixon AFG (2000) *Insect Predator-Prey Dynamics: Ladybird Beetles and Biological Control*. Cambridge University Press, Cambridge, 257 pp.
- Drouet H (1859) Coléoptères açoréennes. *Revue et Magasin de Zoologie Pure et Appliquée* 7: 5–22. <https://doi.org/10.5962/bhl.title.120161>
- Drouet H (1861) *Éléments de la faune açoréenne*. Baillière JB and Fils, Libraires de l’Académie de Médecine, Paris, 245 pp.
- Dyer LA, Letourneau D (2003) Top-down and bottom-up diversity cascades in detrital vs. living food webs. *Ecology Letters* 6(1): 60–68. <https://doi.org/10.1046/j.1461-0248.2003.00398.x>
- Eizaguirre S (2015) Coleoptera, Coccinellidae. In: Ramos MA, Alba J, Bellés X, Gosálbez J, Sierra A, Macpherson E, Serrano J, Templado J (Eds) *Fauna Ibérica* (Vol. 40). Museo Nacional de Ciencias Naturales. CSIC. Madrid, 514 pp.
- Eizaguirre S (2004) Revisión de la tribu Coccidulini en la Peninsula Ibérica (Coleoptera: Coccinellidae). *Estudios del Museo de Ciencias Naturales de Álava* [2003–2004], 18–19: 153–169.
- Erber D, Aguiar AMF (1996) New and remarkable species of the coleopterous fauna of Madeira. *Boletim do Museu Municipal do Funchal* 48(265): 41–62.

- Erber D, Hinterseher W (1988) Contribution to the knowledge of the Madeira beetles. Boletim do Museu Municipal do Funchal 40(202): 139–214.
- Erber D, Hinterseher W (1990) Additional notes to the knowledge of the Madeira beetles. Boletim do Museu Municipal do Funchal 42(222): 141–146.
- Erichson WF (1843) Beitrag zur Insecten-Fauna von Angola, in besonderer Beziehung zur geographischen Verbreitung der Insecten. Archiv für Naturgeschichte 9: 199–267.
- Fabricius JC (1777) Genera Insectorum Eorumque Characteres Anturales Secundum Numerum, Figuram, Situm et Proportionem Omnium Partium Oris Adiecta Mantissa Specierum Nuper Detectarum. Chilonii: Mich. Friedr. Bartschii, 310 pp. <https://doi.org/10.5962/bhl.title.119827>
- Fabricius JC (1787) Mantissa Insectorum Sistens Eorum Species Nuper Detectas Adiectis Characteribus Genericis, Differentiis Specificis, Emendationibus, Observationibus. Tom I. Hafniae: Chist. Gottl. Proft, 348 pp. <https://doi.org/10.5962/bhl.title.36471>
- Fabricius JC (1798) Supplementum entomologiae systematicae. Hafniae: Proft et Storch, [2], 572 pp.
- Faldermann F (1837) Fauna entomologica Trans-Caucasica. Coleoptera. Pars II. Nouveaux Mémoires de la Société Impériale des Naturalistes de Moscou 5: 1–433.
- Fauvel A (1897) Catalogue des coléoptères des îles Madère, Porto Santo et Desertas. Revue d'Entomologie de la Société Française d'Entomologie 16: 45–75.
- Félix AP, Vasconcelos J, Brazão CI, Aguiar AMF, Rocha P (2004) Aspectos bioecológicos de *Hyperaspis pantherina* Fürsch (Coleoptera: Coccinellidae) predador de *Orthezia insignis* Browne (Homoptera: Ortheziidae). Boletim de Sanidad Vegetal, Plagas 30(2): 347–354.
- Félix AP, Rocha P, Brazão CI, Aguiar AMF (2005) Criação laboratorial e aspectos morfológicos de *Hyperaspis pantherina* Fürsch (Coleoptera: Coccinellidae) predador de *Orthezia insignis* Browne (Homoptera: Ortheziidae). Boletim de Sanidad Vegetal, Plagas 31(3): 473–481.
- Félix AP, Aguiar AMF, Brazão C, Rocha P (2008) Luta biológica clássica com *Hyperaspis pantherina* Fürsch (Coleoptera: Coccinellidae) no combate *Orthezia insignis* Browne (Homoptera: Ortheziidae) em Jacarandá. Revista de Ciências Agrárias. Sociedade de Ciências Agrárias de Portugal 31(2): 22–28.
- Franco JC, Magro A, Raimundo A (1992) Estudo comparativo da dinâmica de populações de coccinelídeos em pomares de citrinos no Sul de Portugal. Boletín de Sanidad Vegetal Plagas 18: 69–80.
- Franco JC, Magro A, Carvalho CJ (1994) Situação da luta biológica contra as cochonilhas algodão (Homoptera; Pseudococcidae) em pomares de citrinos. Anais UTAD 5(1): 405–412.
- Fürsch H (1958) Zwei für Deutschland neue Adalia-Arten? Nachrichtenblatt der Bayerischen Entomologen 7: 9–11.
- Fürsch H (1964) Die Arten der Verwandtschaftsgruppe *Henosepilachna elaterii* (Rossi) (= *E. chrysomelina* auct.). (Coleoptera, Coccinellidae). Reichenbachia, Mus. Tierk. Dresden 3(16): 181–208.
- Fürsch H (1965) Die palaearktischen Arten der *Scymnus-bipunctatus*-Gruppe und die europäischer Vertreter der Untergattung *Sidis* (Col. Cocc). Mitteilungen der Münchener Entomologischen Gesellschaft 55: 178–213.
- Fürsch H (1966) Die coccinelliden der Azoren. Boletim do Museu do Funchal 20: 29–33.

- Fürsch H (1974a) [new taxa]. In: Chazeau J, Étienne J and Fürsch H (Eds) Les Coccinellidae de l'île de La Reunion (Insecta Coleoptera). Bulletin du Museum National d'Histoire Naturelle (3) 210 (Zoologie 140): 275–276.
- Fürsch H (1974b) Die Coccinelliden von São Tomé. Mitteilungen der Münchner Entomologischen Gesellschaft 64: 13–39.
- Fürsch H (1975) Zwei bemerkenswerte *Hyperaspis*-Arten aus Ostafrika (Coleoptera: Coccinellidae). Senckenbergiana Biologica 56: 43–45.
- Fürsch H (1977) Coccinellidenausbeuten aus Libanon und dem Iran im Museum Genf mit Beschreibung neuer Scymnini-Arten (Col. Cocc.). Revue Suisse de Zoologie 84: 645–657. <https://doi.org/10.5962/bhl.part.91413>
- Fürsch H (1985) [new taxa]. In: Canepari C, Fürsch H, Kreissl E (Eds) Die Hyperaspis-Arten Mittel-, West- und Südeuropa. Systematik und Verbreitung (Coleoptera Coccinellidae). Giornale Italiano di Entomologia 2: 223–252.
- Fürsch H (1987) Die Scymninae der Kanaren, Azoren und Madeiras. Acta Coleopterologica 3: 1–14.
- Fürsch H (1999) Eine neue Nephus-Art aus Portugal (Coleoptera, Coccinellidae). Mitteilungen Münchener Entomologischen Gesellschaft 89: 75–76.
- Germer EF (1824) Insectorum species: novae aut minus cognitae, descriptionibus illustratae. Coleoptera. Volumen primum (Vol. 1). JC Hendelii. <https://doi.org/10.5962/bhl.title.130964>
- Gillerfors G (1986) Contribution to the coleopterous fauna of the Azores. Boletim do Museu Municipal do Funchal 38(172): 16–27.
- Goeze JAE (1777) Entomologische Beytraege zu des Ritters Linné zwolften Ausgabe des Natursystems. Erster Theil. Leipzig: Weidmanns Erben und Reich [16] + 736 pp. <https://doi.org/10.5962/bhl.title.45974>
- Gonçalves MF, Santos SAP, Raimundo A, Pereira JA, Torres LM (2007) Coccinellids associated with olive groves in north-eastern Portugal. Bulletin OILB/SROP 30: e211.
- Gourreau JM (1974) Systematique de la Tribu des Scymnini (Coccinellidae). Annales de Zoologie Ecologie Animale (INRA) n. hors serie, 221 pp.
- Gravenhorst JLC (1807) Vergleichende Uebersicht des Linnéischen und einiger neueren zoologischen Systeme, nebst dem eingeschalteten Verzeichniss der zoologischen Sammlung des Verfassers und den Beschreibungen neuer Thierarten, die in derselben vorhanden sind. Goettingen: H. Dietrich, 476 pp.
- Harvey JA, Heinen R, Armbricht I, Basset Y, Baxter-Gilbert JH, Bezemer TM, Böhm M, Bommarco R, Borges PAV, Cardoso P, Clausnitzer V, Cornelisse T, Crone EE, Dicke M, Dijkstra K-DB, Dyer L, Ellers J, Fartmann T, Forister ML, Furlong MJ, Garcia-Aguayo A, Gerlach J, Gols R, Goulson D, Habel J-C, Haddad NM, Hallmann CA, Henriques S, Herberstein ME, Hochkirch A, Hughes AC, Jepsen S, Jones TH, Kaydan BM, Kleijn D, Klein A-M, Latty T, Leather SR, Lewis SM, Lister BC, Losey JE, Lowe EC, Macadam CR, Montoya-Lerma J, Nagano CD, Ogan S, Orr MC, Painting CJ, Pham T-H, Potts SG, Rauf A, Roslin TL, Samways MJ, Sanchez-Bayo F, Sar SA, Schultz CB, Soares AO, Thancharoen A, Tscharncke T, Tylianakis JM, Umbers KDL, Vet LEM, Visser ME, Vujic A, Wagner DL, WallisDeVries MF, Westphal C, White TE, Wilkins VL, Williams PH, Wyckhuys KAG, Zhu Z-R, de Kroon H (2020) International scientists formulate a roadmap for

- insect conservation and recovery. *Nature Ecology & Evolution* 4: 174–176. <https://doi.org/10.1038/s41559-019-1079-8>
- Hayden L von (1870) *Entomologische Reise nach dem Sudlichen Spanien der Sierra Guadarrama und Sierra Morena, Portugal und den Cantabrischen gebirgen*. Bei dr. G. Kraatz. Berlin, 221 pp.
- Hayden L von (1906) *Catalogus Coleopterum Europae, Caucassi et Armeniae Russicae*. R. Friedländer, 1891, Berlin, 420 pp.
- Herbst JFW (1783) *Kritisches Verzeichniss meiner Insektensammlung*. *Archiv der Insectengeschichte* (Zürich: J. C. Fuessly) 4: 1–72.
- Herbst JFW (1792) *Natursystem aller bekannten in- und ausländischen insecten, als eine Fortsetzung der von Büffonschen Naturgeschichte. Der Kâfer vierter Theil*. J. Pauli, Berlin, 197 pp.
- Herbst JFW (1797) *Natursystem aller bekannten in- und ausländischen Insekten, als eine Fortsetzung der von Büffonschen Naturgeschichte. Der Kâfer siebenten Theil*. Berlin: Paulischen Buchhandlung, 346 pp.
- Hodek I, van Emden H, Honěk A (2012) *Ecology and Behaviour of the Ladybird Beetles (Coccinellidae)*. Blackwell Publishing Ltd., Oxford, 500 pp. <https://doi.org/10.1002/9781118223208>
- Honěk A, Martinkova Z, Kindlmann P, Ameixa OM, Dixon AF (2014) Long-term trends in the composition of aphidophagous coccinellid communities in Central Europe. *Insect Conservation and Diversity* 7(1): 55–63. <https://doi.org/10.1111/icad.12032>
- Honěk A, Dixon AFG, Soares AO, Skuhrovec J, Martinkova Z (2017) Spatial and temporal changes in the abundance and composition of ladybird (Coleoptera: Coccinellidae) communities. *Current Opinion in Insect Science* 20: 61–67. <https://doi.org/10.1016/j.cois.2017.04.001>
- Horn GH (1895) *Studies in Coccinellidae*. *Transactions of the American Entomological Society* 12: 81–114.
- Israelson G (1984) Coleoptera from the Azores. *Boletim do Museu Municipal do Funchal* 36(161): 142–161.
- Israelson G (1985) Notes of the coleopterous fauna of the Azores, with description of new species of Atheta Thomson (Coleoptera). *Boletim do Museu Municipal do Funchal* 37(165): 5–9.
- Jansson A (1940a) XXIX – Coleoptera: Sämtliche Familien unter Ausschluss der Familie der Carabidae, Dytiscidae, Hydrophilidae und der Gattung Cryptophagus Herbst aus der Familie Cryptophagidae. *Die Arthropodenfauna von Madeira nach den Ergebnissen der Reise von Prof. Dr. O. Lundblad, Juli-August 1935*. *Arkiv for Zoologie*, Bd. 32A (24): 1–64.
- Jung M, Rowhani P, Scharlemann JPW (2019) Impacts of past abrupt land change on local biodiversity globally. *Nature Communications* 10: e5474. <https://doi.org/10.1038/s41467-019-13452-3>
- Kapur AF (1948) On the Old World species of the genus *Stethorus* Weise (Coleoptera, Coccinellidae). *Bulletin of Entomological Research* 39(2): 297–320.
- Korschefsky R (1931) Coccinellidae I. In: Junk W, Schenkling S (Eds) *Coleopterorum Catalogus*. Part 118. W. Junk, Berlin, 224 pp.

- Kovář I (2007) “Coccinellidae”. In: Löbl I, Smetana A (Eds) Catalogue of Palearctic Coleoptera (Vol. 4). Apollo Books, Denmark, 568–630. <https://doi.org/10.1017/S0007485300022434>
- Kugelann JG (1794) Verzeichniss der in einigen Gegenden Preussens bis jetzt entdeckten Käferarten, nebst kurzen Nachrichten von denselben. *Neuestes Magazin für die Liebhaber der Entomologie* 1(5): 513–582.
- Laicharting JN von (1781) Verzeichnis und Beschreibung der Tyroler — Insecten. I. Theil. Käferartige Insecten. I. Zürich: Johann Gaspar Füessli, [4] + xii + [1] + 248 pp.
- Lecompte É, Bouanani MA, Magro A, Crouau-Roy B (2016) Genetic diversity and structuring across the range of a widely distributed ladybird: focus on rear-edge populations phenotypically divergent. *Ecology and Evolution* 6(15): 5517–5529. <https://doi.org/10.1002/ece3.2288>
- Liebmann W (1939) Kurze koleopterologische sammeltage auf Madeira. *Entomologische Blätter* 35: 149–157.
- Linnaeus C (1758) *Systema naturae per regna tria naturae, secundum classes, ordines, genera, species, cum characteribus, differentiis, synonymis, locis*. Tomus I. Editio decima, reformata. Holmiae: Laurentii Salvii, 823 pp. <https://doi.org/10.5962/bhl.title.542>
- Linnaeus C (1761) *Fauna Suecica sistens Animalia Sueciae Regni: Mammalia, Aves, Amphibia, Pisces, Insecta, Vermes*. Distributa per classes et ordines, genera et species, cum differentiis specierum, synonymis auctorum, nominibus incolarum, locis natalium, descriptionibus Insectorum. Editio altera, auctior. Stockholmiae: Laurentii Salvii, 578 pp. [2 pis.] <https://doi.org/10.5962/bhl.title.46380>
- Linnaeus C (1767) *Systema naturae, per regna tria naturae, secundum classes, ordines, genera*. Species cum characteribus, differentiis, synonymis, locis. Tomus I. Editio duodecima. Tomus I, Pars II. Holmiae: Laurentii Salvii, 2 + 533–1327 + [37] pp. <https://doi.org/10.5962/bhl.title.156772>
- Lundblad O (1958) XXXV – Die Käferfauna der Insel Madeira. In: *Die Arthropodenfauna von Madeira nach den Ergebnissen der Reise von Prof. Dr. O. Lundblad, Juli-August 1935*. *Arkiv för Zoologie*, Bd. 11(30): 461–524.
- Mader L (1955) Evidenz der palaearktischen Coccinelliden und ihrer Aberrationen in wort und Bild. II. *Ent. Arb. Museum G. Frey, München* 6(3): 764–1035.
- Magro A, Franco JC, Raimundo A (1992) Dados preliminares sobre a distribuição de duas espécies do género *Nephus* (Col.: Coccin.), novas para Portugal, referenciadas em ecossistemas citrícolas. *Boletim da Sociedade Portuguesa de Entomologia*, 2 (supl. 3): 281–289.
- Magro A, Franco JC, Raimundo A (1994) Os coccinelídeos associados aos citrinos. In: Amaro P, Franco JC (Eds) 1º Congresso de Citricultura. Câmara Municipal, Silves, 443–450.
- Magro A, Araújo J, Hemptinne JL (1999) Coccinellids (Coleoptera: Coccinellidae) in citrus groves in Portugal: listing and analysis of geographical distribution. *Boletim de Sanidad Vegetal Plagas* 25: 335–345.
- Magro A, Hemptinne JL (1999) The pool of coccinellids (Coleoptera: Coccinellidae) to control coccids (Homoptera: Coccoidea) in portuguese citrus groves. *Boletim de Sanidad Vegetal Plagas* 25: 311–320.
- Magro A, Churata-Salcedo J, Lecompte E, Hemptinne J-L, Almeida LM (2020a) A new species of *Nephus* (*Nephus*) (Coleoptera, Coccinellidae) described from Reunion Island. *Zookeys* 962: 123–137. <https://doi.org/10.3897/zookeys.962.51520>

- Magro A, Lecompte E, Hemptinne J-L, Soares AO, Dutrillaux A-M, Murienne J, Fürsch H, Dutrillaux B (2020b) First case of parthenogenesis in ladybirds (Coleoptera: Coccinellidae) suggests new mechanisms for the evolution of asexual reproduction. *Journal of Zoological Systematics and Evolutionary Research* 58(1): 194–208. <https://doi.org/10.1111/jzs.12339>
- Méquignon A (1942) Catalogue des Coléoptères Açoréens. *Annales de la Société Entomologique de France*. CXI Paris.
- Miyatake M (1961) A new genus of the Coccinellidae from Japan and the Ryukyu Islands (Coleoptera). *Memoirs of the College of Agriculture, Ehime University* 6(2): 37–43.
- Mitter H (1984) Beitrag zur kenntnis der käferfauna der Insel Madeira. *Bocagiana, Museu Municipal do Funchal* 80: 1–7.
- Mulsant E (1846) Histoire Naturelle des coléoptères de France. Sulcicolles – Sécuripalpes. Paris: Maisson, 280 pp. [1 pl.]
- Mulsant E (1850) Species des coléoptères trimères sécuripalpes. *Annales des Sciences Physiques et Naturelles, d'Agriculture et d'Industrie de Lyon* 2: 451–1104. <https://doi.org/10.5962/bhl.title.8953>
- Mulsant E (1853) Supplément à la monographie des coléoptères trimères sécuripalpes. *Annales de la Société Linnéenne de Lyon (N. S.), (2)1 [1852–1853]*: 129–333. <https://doi.org/10.5962/bhl.title.60609>
- Mulsant E, Rey C (1852) Description de trois coléoptères nouveaux de la famille des scymniens. *Mémoires de Academie Imperiale des Sciences, Belles-Lettres et Arts de Lyon* (2)2: 221–225.
- Newbold T, Hudson LN, Hill SL, Contu S, Lysenko I, Senior RA, Börger L, Bennett DJ, Chomes A, Collen B, Day J (2015) Global effects of land use on local terrestrial biodiversity. *Nature* 520(7545): 45–50. <https://doi.org/10.1038/nature14324>
- Nedvěd O (2020) Brouci čeledi slunéčkovití (Coccinellidae) střední Evropy. Ladybird beetles (Coccinellidae) of Central Europe. 2nd edition. Academia, Praha, 382 pp.
- Olivier AG (1808) Entomologie, ou histoire naturelle des insectes, avec leur caractères génériques et spécifiques, leur description, leur synonymie, et leur figure eluminée. Coléoptères. Tome sixième. Desray, Paris, 613–1104.
- Oliveira MP (1894) Catalogue des Insectes du Portugal. Universidade de Coimbra, Coimbra, 393 pp.
- Pallas PS (1773) Reise durch verschiedene Provinzen des russischen Reichs. Zweiter Theil. Zweytes Buch vom Jahr 1771. St.-Peterburg: Kayserliche Akademie der Wissenschaften, 371–744.
- Pang H, Tang XF, Booth RG, Vandenberg N, Forrester J, Mchugh J, Ślipiński A (2020) Revision of the Australian Coccinellidae (Coleoptera). Genus *Novius* Mulsant of Tribe Noviini. *Annales Zoologici* 70(1): 1–24. <https://doi.org/10.3161/00034541ANZ2020.70.1.001>
- Paykull G von (1798) Anmärkningar vid genus *Coccinella*, och beskisning öfver de Svånska arter deraf som äro med fina hår beströdde. *Kongliga Vetenskaps Akademiens nya Handlingar* 19: 144–156.
- Plaza E (1981) Los representantes espanioles de *Nephus* del subgenera *Sidis* Muls. 1851 (Col., Coccinellidae). *Boletin de la Asociacion Espanola de Entomologia* 4 [1980]: 235–242.

- Poda von Neuhaus N (1761) *Insecta Musei Graecensis, que in ordines, genera et species juxta Systema Naturae Linnaei digessit. Graecii, Widmanstad*, 127 pp.
- Pontoppidan EL (1763) *Den Danske atlas, eller Konge-Riget Dannemark, med dets naturlige egenskaber, elementer, inbyggere, vaexter, dyr og andre qffbdninger, dets gamle tildragelser og naervaerende omstaendigheder i aile provintzer, staeder, kirkzer, slotte og herregaarde. Forestillet ved en udførlig Lands-Beskrivelse, saa og oplyst med dertil forfaerdigede landkort over enhver provintz, samt ziret med staedernes prospecter, grund-ridser, og andre merkvaerdige kaaber-stykker. Efter Hoy-Kongelig allernaadigst Befalning. Tomus I. Kjøbenhavn: A.H. Godieche*, xl + [iv] + 723 + [1] pp.
- Raimundo AAC (1992) *Novas Espécies de Scymnini para a Fauna de Coccinelídeos de Portugal. Actas do V Congresso Ibérico de Entomologia. Boletim da Sociedade Portuguesa Entomologia*, 1 (supl. 3): 373–384.
- Raimundo AAC, Alves MMLG (1986) *Revisão dos Coccinelídeos de Portugal. Universidade de Évora, Évora*, 103 pp.
- Raimundo A, Canepari C, Mendel Z, Branco M, Franco JC (2006) *Iberorhynchobius* Raimundo & Canepari gen. nov., for *Coccidula rondensis* Eizaguirre (Coleoptera: Coccinellidae). *Zootaxa* 1312: 49–58. <https://doi.org/10.11646/zootaxa.1312.1.4>
- Romanowski J, Ceryngier P, Větrovec J, Szawaryn K (2019) The Coccinellidae (Coleoptera) from Fuerteventura, Canary Islands. *Zootaxa* 4646: 101–123. <https://doi.org/10.11646/zootaxa.4646.1.6>
- Rossi P (1794) *Mantissa insectorum exhibens species nuper in Etruria collectas, adiectis faunae Etruscae illustrationibus, ac emendationibus. Tomus II. Pisis: Typographia Prosperi*, 154 pp.
- Roy HE, Brown PMJ, Adriaens T, Berkven N, Borges I, Clusella-Trullas S, De Clercq P, Eschen R, Estoup A, Evans EW, Facon B, Gardiner MM, Gil A, Grez A, Guillemaud T, Haelewaters D, Honěk A, Howe AG, Hui C, Hutchison WD, Kenis M, Koch RL, Kulfan J, Handley LL, Lombaert E, Loomans A, Losey J, Lukashuk AO, Maes D, Magro A, Murray KM, Martin GS, Martinkova Z, Minnaar I, Nedvěd O, Orlova-Bienkowskaja MJ, Rabitsch W, Ravn HP, Rondoni G, Rorke SL, Ryndevich SK, Saethre MG, Sloggett J, Soares AO, Stals R, Tinsley MC, Vandereycken A, Wielink P, Vigláová S, Zach P, Zaviezo T, Zhao ZZ (2016) The harlequin ladybird, *Harmonia axyridis*: An inspiration for global collaborations on invasion Biology. *Biological Invasions* 18(4): 997–1044. <https://doi.org/10.1007/s10530-016-1077-6>
- Roy HE, Migeon A (2010) Ladybeetles (Coccinellidae). In: Roques A, Kenis M, Lees D, Lopez-Vaamonde C, Rabitsch W, Rasplus J-Y, Roy D (Eds) *Alien terrestrial arthropods of Europe. BioRisk* 4(1): 293–313. <https://doi.org/10.3897/biorisk.4.49>
- Sahlberg JR (1913) *Coleoptera mediterranea orientalia quae in Aegypto, Palaestina, Syria, Caramania atque in Anatolia occidentali anno 1904 collegerunt John Sahlberg et Unio Saalas. Öfversigt af Finska Vetenskaps-Societetens Förhandlingar (A)* 55(19) [1912–1913]: 1–282.
- Santos SAP, Pereira JA, Raimundo A, Torres LM, Nogueira AJA (2010) Response of coccinellid community to the dimethoate application in olive groves in Northeastern Portugal. *Spanish Journal of Agricultural Research* 8(1): e126. <https://doi.org/10.5424/sjar/2010081-1151>

- Santos SAP, Raimundo A, Bento A, Pereira JA (2012) Species abundance patterns of coccinellid communities associated with olive, chestnut and almond crops in north-eastern Portugal. *Agricultural and Forest Entomology* 14(4): 376–82. <https://doi.org/10.1111/j.1461-9563.2012.00578.x>
- Schneider DH (1792) Verzeichniss und Beschreibung der in der Sammlung des Herausgebers befindlichen zur Gattung *Coccinella* gehörigen europâischen Kâfer (Sonnen-Kâfer oder Blattlaus-Kafer). *Neuestes Magazin für die Liebhaber der Entomologie* 2: 128–256.
- Seago AE, Giorgi JA, Li J, Slipiński A (2011) Phylogeny, classification and evolution of ladybird beetles (Coleoptera: Coccinellidae) based on simultaneous analysis of molecular and morphological data. *Molecular Phylogenetics and Evolution* 60(1): 137–51. <https://doi.org/10.1016/j.ympev.2011.03.015>
- Serrano ARM (1982) Contribuição para o conhecimento do povoamento, distribuição e origem dos Coleópteros do arquipélago dos Açores (Insecta, Coleóptera). *Boletim do Museu Municipal do Funchal* 36(147): 67–104.
- Serrano ARM, Borges PAV (1987) A further contribution to the knowledge of the coleoptera (Insecta) from Azores. *Boletim do Museu Municipal do Funchal* 39(187): 51–69.
- Sicard A (1923) Coccinellides nouveaux de l’Afrique du Nord. *Bulletin de la Société d’Histoire Naturelle de l’Afrique du Nord* 14: 78–80.
- Silva EB, Franco JC, Vasconcelos T, Branco M (2010) Effect of ground cover vegetation on the abundance and diversity of beneficial arthropods in citrus orchards. *Bulletin of Entomological Research* 100: 489–99. <https://doi.org/10.1017/S0007485309990526>
- Silva EB, Costa L, Mateus C, Franco JC (2006) Principais grupos de artrópodes auxiliares referenciados em citrinos em Portugal: insectos. In: Franco JC, Ramos AP, Moreira I (Eds) *Infra-estruturas Ecológicas e Protecção Biológica: Caso dos Citrinos*. ISA Press, Lisboa, 158–160.
- Ślipiński A, Burckhardt D (2006) Revision of the Australian Coccinellidae (Coleoptera). Part 5. Tribe Serangiini. *Annales Zoologici, Warsaw* 56: 37–58.
- Soares AO, Borges I, Borges PAV, Labrie G, Lucas E (2008) *Harmonia axyridis*: what will stop the invader? *BioControl* 53(1): 127–145. <https://doi.org/10.1007/s10526-007-9141-x>
- Soares AO, Borges I, Cabral S, Figueiredo H, Resendes R (2006) New records of Coccinellidae (Coleoptera) to the Azores islands. XII Expedição Científica do Departamento de Biologia – Pico 2005. *Relatórios e Comunicações do Departamento de Biologia* 34: 87–91.
- Soares AO, Elias RB, Schanderl H (1999) Population Dynamics of *Icerya purchasi* Maskell (Homoptera: Margarodidae) and *Rodolia cardinalis* Mulsant (Coleoptera: Coccinellidae) in two citrus orchards of São Miguel island (Azores). *Boletim de Sanidad Vegetal de Plagas* 25: 459–467.
- Soares AO, Elias RB, Resendes R, Figueiredo H (2003a) Contribution to the knowledge of the Coccinellidae (Coleoptera) fauna from the Azores islands. *Arquipélago. Life and Marine Sciences* 20A: 47–53.
- Soares AO, Elias RB, Raimundo A (2003b) New Records of Scymnini (Coleoptera: Coccinellidae) to Madeira Island. *Boletim do Museu Municipal do Funchal* 54(311): 25–29.
- Soares AO, Elias RB, Raimundo A (2003c) Approach to the knowledge of Coccinellidae (Coleoptera) species diversity of Madeira and Porto Santo islands. In: Soares AO, Ventura MA, Garcia V, Hemptinne J-L (Eds): *Proceedings of the 8th International Symposium on*

- Ecology of Aphidophaga: Biology, Ecology and Behaviour of Aphidophagous Insects. Arquipélago, Ponta Delgada, 6 pp.
- Soares AO, Honěk A, Martinkova Z, Skuhrovec J, Cardoso P, Borges I (2017) *Harmonia axyridis* failed to establish in the Azores: the role of specie richness, intraguild interactions and resource availability. *BioControl* 62(3): 423–434. <https://doi.org/10.1007/s10526-017-9794-z>
- Soares AO, Honěk A, Martinkova Z, Brown PMJ, Borges I (2018) Can Native Geographical Range, Dispersal Ability and Development Rates Predict the Successful Establishment of Alien Ladybird (Coleoptera: Coccinellidae) Species in Europe? *Frontiers in Ecology and Evolution* 6: e57. <https://doi.org/10.3389/fevo.2018.00057>
- Stephens JF (1832) In: Illustrations of British entomology or, a synopsis of indigenous insects: containing their generic and specific distinctions; with an account of their metamorphoses, times of appearance, localities, food, and economy, as far as practicable. Mandibulata (Vol. IV). Baldwin et Cradock, London, 367–413.
- Suffrian CWLE (1843) Entomologische Bemerkungen. *Entomologische Zeitung* (Stettin) 4: 91–95.
- Szawaryn K, Bocak L, Ślipiński A, Escalona HE, Tomaszewska W (2015) Phylogeny and evolution of phytophagous ladybird beetles (Coleoptera: Coccinellidae: Epilachnini), with recognition of new genera: Phylogeny and evolution of Epilachnini. *Systematic Entomology* 40(3): 547–569. <https://doi.org/10.1111/syen.12121>
- Szawaryn K, Větrovec J, Tomaszewska V (2020) A New Tribe of the Ladybird Beetle Subfamily Microweiseinae (Coleoptera: Coccinellidae) Discovered on an Island in the North Atlantic Ocean. *Insects* 11: e367. <https://doi.org/10.3390/insects11060367>
- Tarnier MF (1860) Insect Coleoptère. In: Morelet A (Ed.) Iles Açores. Notice sur l'Histoire Naturelle des Açores, suivie d'une descriptions des Molusques terrestres de cet archipel. Baillière, Paris, 87–96.
- Tavares C, Jactel H, Van Halder I, Branco M (2015a) Reproductive Requirements and Life Cycle of *Iberorhizobius rondensis* (Coleoptera: Coccinellidae), Potential Biological Control Agent of *Matsucoccus feytaudi* (Hemiptera: Matsucoccidae). *Environmental Entomology* 44(3): 846–854. <https://doi.org/10.1093/ee/nvv042>
- Tavares C, Jactel H, Van Halder I, Mendel Z, Branco M (2014) A case of ecological specialization in ladybirds: *Iberorhizobius rondensis* (Coleoptera: Coccinellidae), potential biocontrol agent of *Matsucoccus feytaudi* (Hemiptera: Matsucoccidae). *Bulletin of Entomological Research* 104(3): 367–75. <https://doi.org/10.1017/S0007485314000182>
- Tavares C, Roques A, Courtial B, Branco M, Jactel H, Lopez-Vaamonde C (2015b) Phylogeography of the ladybird *Iberorhizobius rondensis*, a potential biological control agent of the invasive alien pine bast scale *Matsucoccus feytaudi*. *BioControl* 60(1): 59–69. <https://doi.org/10.1007/s10526-014-9622-7>
- Thunberg CP (1795) Dissertatio entomologica, sistens Insecta Suecica. IX. Exam. Steno Edvardus Westman. Upsaliae, 105–113.
- Tomaszewska W (2010) *Rhizobius* Stephens, 1829 (Coleoptera, Coccinellidae), a revision of the world species. *Fauna Mundi*, Vol. 2, Polish Academy of Sciences, Warszawa, 475 pp.
- Tomaszewska W, Szawaryn K (2016) Epilachnini (Coleoptera: Coccinellidae)-A Revision of the World Genera. *Journal of Insect Science* 16(1): 1–91. <https://doi.org/10.1093/jisesa/iew082>

- Uyttenboogaart DL (1930) Contributions to the knowledge of the fauna of the Canary-islands. Tijdschrift voor Entomologie 73: 211–235.
- Uyttenboogaart DL (1947) Coleoptera (excl. Staphylinidae et Hydropilidae) von den Azoren und Madeira. Iter entomologicum et botanicum ad insulas Madeiram et Azores anno 1938 a Richard Frey, Ragnar Stora et Carl Cedercreutz factum. Societas Scientiarum Fennica. Commentationes Biologicae 8(12): 1–15.
- Weise J (1879) Bestimmungs-Tabellen der europäischen Coleopteren II. Coccinellidae. Zeitschrift für Entomologie (N. F.) (Breslau) 7: 88–156.
- Weise J (1885) Coccinellidae. II. Auflage. Mit Berücksichtigung der Arten aus dem nördlichen Asien. In: Reitter E (Ed.) Bestimmungs-Tabellen der europäischen Coleopteren. II. Heft. Mödling: H. Busing, 83 pp.
- Weise J (1910) Coccinellidae von Madagaskar, den Comoren und den Inseln Ostafrikas. Voeltzkow, Reise in Ostafrika in den Jahren 1903–1905 2: 507–520.
- Winkler A (1924–1932) Catalogus coleopterorum regionis palaearcticae. A. Winkler, Wien.
- Whittaker RJ, Fernández-Palacios JM (2007) Island biogeography: ecology, evolution and conservation (2nd Edn.). Oxford University Press, New York, 401 pp.
- Wollaston TV (1854) Insecta Maderensia; being an account of the insects of the islands of the Madeiran group. Taylor & Francis, London, 634 pp. <https://doi.org/10.5962/bhl.title.9060>
- Wollaston TV (1857) Catalogue of the Coleopterous insects of Madeira in the collection of the British Museum. Taylor & Francis, London, 234 pp.
- Wollaston TV (1862) XXXVI. – On Additions to the Madeiran Coleoptera. Annals and Magazine of Natural History 10: 331–342. <https://doi.org/10.1080/00222936208681334>
- Wollaston TV (1864) Catalogue of the Coleopterous Insects of the Canaries in the Collection of the British Museum. Taylor & Francis, London, 648 pp.
- Wollaston TV (1865) Coleoptera Atlantidum, Being an Enumeration of the Coleopterous of the Madeiras, Salvages and Canaries. Taylor & Francis, London, 526 pp. <https://doi.org/10.5962/bhl.title.29516>
- Wollaston TV (1867) Coleoptera Hesperidum, Being an Enumeration of the Coleopterous Insects of the Cape Verde Archipelago. London: J. van Voorst, 285 pp. <https://doi.org/10.5962/bhl.title.48651>
- Wollaston TV (1870) On addition to the coleopterous fauna of the Cape-Verde Islands. The Annals and Magazine of Natural History (4) 5: 245–251. <https://doi.org/10.1080/00222937008696149>
- Wollaston TV (1871) On Additions to the Atlantic Coleoptera. Transactions of the Royal Entomological Society of London (4.Ser.): 203–314.
- Vandenberg NJ (2002) Coccinellidae. In: Arnett Jr RH, Thomas MC, Skelley PE, Frank JH (Eds) American Beetles (Vol. 2). CRC Press, Boca Raton, 371–389.
- Vitousek PM, Mooney HA, Lubchenco J, Melillo JM (1997) Human domination of Earth's ecosystems. Science, 277(5325): e494499. <https://doi.org/10.1126/science.277.5325.494>
- Wang X, Ślipiński A, Ren S (2013) The genus *Microserangium* Miyatake (Coleoptera, Coccinellidae) from China. Zookeys 359: 13–33. <https://doi.org/10.3897/zookeys.359.6057>